REMARKS

I. Status of Claims

Claims 51-73, 76-85, 88-97, and 100-103 are pending. No claims are amended herein.

Applicants respectfully acknowledge the withdrawal of the rejections over U.S. Patent No. 4,602,052 to Weber et al. ("Weber"); over Weber in view of U.S. Patent No. 6,550,508 to Yamaguchi et al. ("Yamaguchi"); over Weber in view of U.S. Patent No. 7,199,175 to Vasseur ("Vasseur"); over U.S. Patent No. 6,982,050 to Chauvin et al. ("Chauvin") in view of Weber; and over Chauvin and Weber in view of U.S. Patent No. 5,681,874 to Lucas et al. ("Lucas"). *See* July 28, 2008, Final Office Action at 7.

II. Rejections Under 35 U.S.C. § 103(a)

A. Weber in view of Chauvin and Lucas

The Examiner rejects claims 51-62, 65-67, 72, 73, 76-79, 81, 82, 84, 85, 88-91, 93, 94, 96, 97, and 100-103 under 35 U.S.C. § 103(a) as being unpatentable over Weber in view of Chauvin and Lucas for the reasons set forth in pages 2-6 of the July 28, 2008, Final Office Action at 2-6. In particular, the Examiner argues that Applicants have "not provided a conclusive showing of unexpected results to establish a criticality for the claimed ammonium salt." *Id.*

The Examiner previously dismissed Applicants' arguments of unexpected results, asserting that Tables 1 and 2 do not provide "a conclusive showing of unexpected results to establish a criticality for the claimed ammonium salt." Nov. 15, 2007, Office Action at 3, 7. It appears that the Examiner dismisses the unexpected results disclosed

in the application because they are allegedly not commensurate in scope with the claims and the prior art. Specifically, the Examiner identified the relevant examples as comparative Example 6 and inventive Examples 7-9, but questioned the use of Bardac® LF-80 in Example 6, which contains a single nitrogen, whereas Weber is directed to a number of salts containing two nitrogens, like the claimed salt. *See id.* (including the salts of Burke (U.S. Patent No. 3,686,113), which are incorporated by reference). The Examiner concluded that a "more persuasive showing of results would evidence an unexpected difference between the claimed salt having two nitrogens and additional salts having two nitrogens and not satisfying the claimed structure." *Id.* at 7-8. The Examiner further concluded that the tests provided in the specification are "not sufficient to permit a conclusion respective the relative effectiveness of applicant's claimed compounds and the compounds of the closest prior art (when less than all cited compounds are tested)." *Id.* at 8.

While Applicants respectfully traverse this rejection for the reasons of record, in order to advance prosecution and to support their position of nonobviousness, Applicants submit herewith the Declaration under 37 C.F.R. § 1.132 of Giuseppina Ratti ("Declaration"), which further demonstrates that elastomeric compositions containing the claimed quaternary ammonia salts have significantly better physical characteristics than elastomeric compositions containing ammonium salts that fall outside the scope of the claims. Giuseppina Ratti is one of the co-inventors of the present application. While Applicants' specification provides data showing the unexpected discovery with respect to the claimed quaternary ammonium salts over ammonium salts with a single nitrogen,

the Declaration further establishes the unexpected discovery with respect to the claimed quaternary ammonium salts over ***di***quaternary ammonium salts, such as Redicote E-11.

In particular, Applicants prepared a comparative elastomeric composition containing a diquaternary ammonium salt (i.e., Duoquad® T/50) that appears to be structurally similar to Redicote E-11, the ammonium salt that Burke suggests, comparing it with the comparative elastomeric compositions of Examples 4-6 and the inventive elastomeric compositions of Examples 7 and 8 of the present application. *See* Declaration at ¶ 5. Duoquad® T/50 is a diquaternary ammonium chloride, i.e., an ammonium salt having two nitrogen atoms that are both quaternized (i.e., both have a positive charge). *See* Duoquad Product Data Sheet attached to Declaration.

The comparative elastomeric composition (identified as Example 10 in the Declaration) was identical to the inventive elastomeric compositions of Examples 7 and 8, except the comparative elastomeric composition contained Duoquad® T/50 instead of examples of the claimed quaternary ammonium salts. *See* Declaration at ¶ 6 and Table A. Thus, as suggested by the Examiner, Applicants have presented data comparing elastomeric compositions containing the claimed salt with a comparative elastomeric composition containing a salt having two nitrogens and not satisfying the claimed structure.

Specifically, the physical characteristics of the inventive and comparative elastomeric compositions were compared. *See id.* at ¶ 8 and Table B. The results of this testing illustrate that comparative Example 10 has a high value for its Mooney viscosity (i.e., poor processability of the rubber mixture), which is only slightly lower than comparative Example 5 (i.e., a composition devoid of any secondary accelerators (e.g.,

DPG or ammonium salt)). *See id.* at ¶ 9. In contrast, inventive Examples 7 and 8 provided a lower Mooney viscosity as compared to comparative Examples 5 and 10 and substantially identical to comparative Example 4, which contained the secondary accelerator DPG. *See id.*

Furthermore, as to the MDR rheometric analysis, comparative Example 10 also provided unsatisfactory results, since the parameters of the rheometric curve were substantially identical to those of comparative Example 5 that had no secondary accelerators. *See id.* at ¶ 11. In particular, the inventive Examples 7 and 8 had values for t30 (min) and t90 (min) (i.e., the time required to reach 30% or 90% of the maximum torque MH) that are acceptable for an industrial application, and that substantially correspond to, or are even better than, those achieved by comparative Example 4, which contained the secondary accelerator DPG. *See id.*

Accordingly, the Declaration demonstrates that the quaternary ammonium salts according to the claimed invention, and not the diquaternary ammonium salts of Burke (e.g., Redicote E-11 (and similar Duoquad® T/50)), can be advantageously used as secondary accelerators in replacement of DPG in rubber compositions reinforced with silica. *See id.* at ¶ 12. This is seen in their respective effects upon the vulcanization rate (*see* the rheometric data) and on the processability (*see* the Mooney viscosity values) of the rubber mixtures. *See id.*

It would not have been obvious to a person of ordinary skill in the art that elastomeric compositions containing the claimed quaternary ammonium salts would have significantly better physical characteristics in terms of vulcanization rate and processability as compared with elastomeric compositions containing diquaternary

ammonium salts, which fall outside the scope of the claims, such as Duoquad® T/50 (or Redicote E-11). *See id.* at ¶ 13. Weber, Chauvin, or Lucas do not recognize or appreciate the unexpected benefits provided by the claimed compositions comprising the claimed quaternary ammonium salts, and, therefore, Applicants respectfully submit that the rejection should be withdrawn.

In making this argument, Applicants are not making any admission that the Examiner has established a *prima facie* case of obviousness. To the contrary, as just explained, no such *prima facie* case has been established. The testing merely shows unexpected results with respect to the claimed elastomeric compositions and the claimed quaternary ammonium salts, further demonstrating that there is no *prima facie* case of obviousness.

B. Weber, Chauvin, and Lucas, and further in view of Yamaguchi

The Examiner rejects claims 63, 64, 80, and 92 under 35 U.S.C. § 103(a) as being unpatentable over Weber, Chauvin, and Lucas as applied in claim 51 above, and further in view of Yamaguchi. *See* July 28, 2008, Final Office Action at 6.

Applicants respectfully traverse this rejection for the reasons of record. As discussed above, the claimed elastomeric compositions comprising the claimed quaternary ammonium salts exhibit unexpected properties that were not recognized by Weber, Chauvin, or Lucas. Yamaguchi also fails to appreciate these properties.

Accordingly, Applicants respectfully request that the Examiner withdraw this rejection.

C. Weber, Chauvin, and Lucas, and further in view of Vasseur

The Examiner rejects claims 68-71, 83, and 95 under 35 U.S.C. § 103(a) as being unpatentable over Weber, Chauvin, and Lucas as applied in claim 51 above, and further in view of Vasseur. *See* July 28, 2008, Office Action at 6.

Applicants respectfully traverse this rejection for the reasons of record. As discussed above, the claimed elastomeric compositions comprising the claimed quaternary ammonium salts exhibit unexpected properties that were not recognized by Weber, Chauvin, or Lucas. Vasseur also fails to appreciate these properties.

Thus, Applicants respectfully request that the Examiner withdraw this rejection.

Conclusion

In view of the foregoing remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.

If the Examiner believes a telephone conference could be useful in resolving any outstanding issues, he is respectfully invited to contact Applicants' undersigned counsel at (202) 408-4152.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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GARRETT & DUNNER, L.L.P.

Dated: January 27, 2009

By: _____
Aaron M. Raphael
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Attachment: Declaration under 37 C.F.R. § 1.132 of Giuseppina Ratti (with Duoquad Product Data Sheet attached)